

This listing of claims will replace all prior versions, and listings, of claims in the application:

LISTING OF CLAIMS:

1. (Currently Amended) A computer program product for creating an XML representation of data stored in a relational database system, the computer program product comprising a computer readable medium having computer readable program code therein, the computer program product comprising:

computer readable program code for specifying a set of conditions that data to be retrieved from the relational database system must satisfy;

computer readable program code for specifying an output format that the XML representation must satisfy;

computer readable program code for creating from the set of conditions and the format, a mapping description using a markup language, the markup language comprising SQL function and XSL function, said mapping description including a user defined template identifying a defined procedure for retrieving data from the relational database;

computer readable program code for retrieving data from the relational database using the mapping description in association with a standard database access method, including computer readable program code for storing a plurality of XRTL scripts in a cache as run-time objects, retrieving one of the run-time objects from the cache, and using the retrieved run-time object to obtain data from the relational database; and

computer readable program code for formatting an XML object representing the retrieved data using the mapping description, including computer readable program code for using the retrieved run-time object to format the retrieved data.

2. (Original) The computer program product according to claim 1 wherein the mapping description comprises a first section and a second section wherein the first section defines the data to be retrieved from the database using the specified set of conditions that the data must satisfy; and the second section defines the output format.
3. (Original) The computer program product according to claim 2 wherein the first section comprises a list of individual search conditions.
4. (Original) The computer program product according to claim 3 wherein a search condition comprises the syntax of an SQL prepared statement specifying one or more tables upon which the statement will act; one or more columns of the table that will be retrieved; and a list of parameters for determining a location where a value of a parameter is to be obtained, the value of the parameter to be used in a condition clause of the SQL prepared statement.
5. (Original) The computer program product according to claim 3 further comprising computer readable program code for creating a first run-time object representing elements of the mapping description wherein the run-time object represents a search condition as a JDBC prepared statement and defines Java variables for the values of the parameters.

6. (Original) The computer program product according to claim 5 wherein the first run-time object produces an internal representation of the data retrieved from the database the computer program product further comprising:

computer readable program code for providing the value of a variable needed for a first SQL prepared statement;

computer readable program code for executing the first SQL prepared statement; and

computer readable program code for storing a result of the executing step as an internal representation.

7. (Previously Presented) The computer program product according to claim 6 further comprising:

computer readable program code for invoking an XSL transformation engine with the first run-time object; and

computer readable program code for operating on the internal representation using the first run-time object.

8. (Original) The computer program product according to claim 6 further comprising:

computer readable program code for generating software events;

computer readable program code for generating data associated with the software events;

and

computer readable program code for sequencing the software events and the associated data based on the internal representation of the retrieved data.

9. (Previously Presented) The computer program product according to claim 8 further comprising computer readable program code for providing the software events and associated data to an XSL transformation, the providing being performed for any one of: a single event; a sub-group of events; or a group comprising all of the generated events.

10. (Original) The computer program product according to claim 1 wherein the output format comprises XSL syntax for determining a transformation that is to be applied to an internal representation of the data retrieved from database according to the specification.

11. (Original) The computer program product according to claim 10 further comprising computer readable program code for creating a second run-time object using a Xalan Templates object for representing the XSL transformation.

12. (Original) The computer program product according to claim 1 further comprising:

computer readable program code for creating a run-time object;

computer readable program code for saving the run-time object in a run-time object cache;

computer readable program code for using the cached run-time object.

13. (Currently Amended) A computer program product for updating information stored in a relational database based on data extracted from an XML object, the computer program product comprising the steps of:

computer readable program code for specifying a set of conditions that data retrieved from the XML object system must satisfy;

computer readable program code for specifying a set of actions that need to be executed on the tables of one or more database;

computer readable program code for creating from the set of conditions and the set of actions, a mapping description using a markup language, the markup language having SQL function and XSL function, said mapping description including a user defined template identifying a defined procedure for retrieving data from the relational database;

computer readable program code for retrieving XML object data from the XML object using the mapping description in association with a standard XML processing method, including computer readable program code for storing a plurality of XRTL scripts in a cache as run-time objects from the cache, and using the retrieved run-time object to retrieve said XML data; and

computer readable program code for performing an action on the database using the mapping description in association with a standard database access method, including computer readable program code for using the retrieved run-time object for performing said action.

14. (Original) The computer program product according to claim 13 wherein the mapping description comprises a first section and a second section, the first section defining the XML object data to be retrieved from the XML object; the second section defining database operations to be performed.

15. (Original) The computer program product according to claim 14 further comprising:

computer readable program code for specifying in XSL syntax, a location of the XML object data to be retrieved from the XML object, wherein the XSL syntax determines a transformation;

computer readable program code for retrieving XML object data;

computer readable program code for creating an internal representation of required data from the XML object data based on the transformation.

16. (Previously Presented) The computer program product according to claim 15 further comprising:

computer readable program code for creating a first run-time object which first run-time object uses a Xalan Templates object, wherein the represents the XSL transformation.

17. (Original) The computer program product according to claim 13 wherein the mapping description specifies a sequence of database operations and their respective inputs.

18. (Original) The computer program product according to claim 17 further comprising computer readable program code for specifying input to a database operation using an XSL template.

19. (Previously Presented) The computer program product according to claim 17 wherein a database operation comprises any one of insert; update; update or insert; or delete.

20. (Original) The computer program product according to claim 17 wherein an operation comprises an SQL prepared statement.

21. (Original) The computer program product according to claim 17 further comprising computer readable program code for sequencing database operations as segmented transactional groups.

22. (Previously Presented) The computer program product according to claim 16 further comprising:

computer readable program code for creating a second run-time object that represents elements of the mapping description;

computer readable program code for representing, by the second run-time object, a database operation as a JDBC prepared statement; and

computer readable program code for defining JAVA variables by way of the second run-time object, the JAVA variables holding values of parameters.

23. (Original) The computer program product according to claim 22 further comprising:

computer readable program code for associating with an SQL statement, a value of a variable from the internal representation of retrieved data;

computer readable program code for executing the SQL statement.

24. (Original) The computer program product according to claim 23 wherein the database operations are performed by respecting predefined transactional boundaries such that an operation in a group is only completed if all the operations of the group can be executed successfully.

25. (Original) The computer program product according to claim 13 further comprising:

computer readable program code for creating a run-time object;

computer readable program code for invoking by the run-time object, an XSL transformation engine;

computer readable program code for creating an internal representation of retrieved data from input from the XML object using the XSL transformation engine.

26. (Original) The computer program product according to claim 13 further comprising:

computer readable program code for creating a run-time object;

computer readable program code for saving the run-time object in a run-time object cache;

computer readable program code for using the cached run-time object in a procedure.

27. (Currently Amended) A method for creating an XML representation of data stored in a relational database system, the method comprising the steps of:

specifying a set of conditions that data to be retrieved from the relational database system must satisfy;

specifying an output format that the XML representation must satisfy;

creating from the set of conditions and the format, a mapping description using a markup language, the markup language comprising SQL function and XSL function, said mapping description including a user defined template identifying a defined procedure for retrieving data from the relational database;

retrieving data from the relational database using the mapping description in association with a standard database access method, including storing a plurality of XRTL scripts in a cache as run-time objects, retrieving one of the run-time objects from the cache, and using the retrieved run-time object to obtain data from the relational database; and

formatting an XML object representing the retrieved data using the mapping description, including using the retrieved run-time object to format the retrieved data.

28. (Currently Amended) A method for updating information stored in a relational database based on data extracted from an XML object, the method comprising the steps of:

specifying a set of conditions that data retrieved from the XML object system must satisfy;

specifying a set of actions that need to be executed on the tables of one or more database;

creating from the set of conditions and the set of actions, a mapping description using a markup language, the markup language having SQL function and XSL function, said mapping description including a user defined template identifying a defined procedure for retrieving data from the relational database;

retrieving XML object data from the XML object using the mapping description in association with a standard XML processing method, including storing a plurality of XRTL scripts in a cache as run-time objects from the cache, and using the retrieved run-time object to retrieve said XML data; and

performing an action on the database using the mapping description in association with a standard database access method, including using the retrieved run-time object for performing said action.

29. (Currently Amended) A system for creating an XML representation of data stored in a relational database system, the system comprising:

a user specified set of conditions that data to be retrieved from the relational database system must satisfy and user specified output format that the XML representation must satisfy;

a mapper creating from the set of conditions and the format, a mapping description using a markup language, the markup language comprising SQL function and XSL function, said mapping description including a user defined template identifying a defined procedure for retrieving data from the relational database;

a retriever retrieving data from the relational database using the mapping description in association with a standard database access method, including storing a plurality of XRTL scripts in a cache as run-time objects, retrieving one of the run-time objects from the cache, and using the retrieved run-time object to obtain data from the relational database; and

a formatter formatting an XML object representing the retrieved data using the mapping description, including using the retrieved run-time object to format the retrieved data.

30. (Currently Amended) A system for updating information stored in a relational database based on data extracted from an XML object, the system comprising:

a user specified set of conditions that data retrieved from the XML object system must satisfy, and a set of actions that need to be executed on the tables of one or more database;

a mapper creating from the set of conditions and the set of actions, a mapping description using a markup language, the markup language having SQL function and XSL function, said mapping description including a user defined template identifying a defined procedure for retrieving data from the relational database;

a retriever retrieving XML object data from the XML object using the mapping description in association with a standard XML processing method, including storing a plurality of XRTL scripts in a cache as run-time objects from the cache, and using the retrieved run-time object to retrieve said XML data; and

a performer performing an action on the database using the mapping description in association with a standard database access method performing an action on the database using the mapping description in association with a standard database access method, including using the retrieved run-time object for performing said action.